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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/721,806	11/24/2000	Richard Hans Harvey	063170.6600	3613
5073	7590	12/24/2008		
BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			EXAMINER PANNALA, SATHYANARAYA R	
			ART UNIT	PAPER NUMBER
			2164	
			NOTIFICATION DATE	DELIVERY MODE
			12/24/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptomail1@bakerbotts.com

glenda.orrantia@bakerbotts.com

Office Action Summary

Application No.

09/721,806

Applicant(s)

HARVEY, RICHARD HANS

Examiner

Sathyanarayan Pannala

Art Unit

2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,9,10,14-18,22,23 and 27-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,9,10,14-18,22,23 and 27-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/12/2008.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Reopened

1. In view of the Appeal Brief filed on 9/30/2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 as (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Charles Rones/

Supervisory Patent Examiner, Art Unit 2164

2. In this Office Action, claims 1-5, 9-10, 14-18, 22-23 and 27-31 are pending.

Claim Objections

3. Claims 1-5, 14-18 and 27-31 are objected, because none of the claims are directed to statutory subject matter. Independent claims 16 deals with simple abstract ideas. A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139. See recent court case, *In-Re Comiskey, _*, Fed. Cir., 2007_ decided 9/20/2007. (see MPEP 2106(IV)(B)(2)(b)(ii)). In this case, claim 16 have to be amended as "computer implemented method" in place of "method" to overcome the objection. Claims 2-5, & 27-30 and 15-18 are dependent on claims 1, 14 and 22 respectively. They are objected under the same rationale as claims 1 and 14.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 14 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant amended claims by adding the limitation **"the plurality of results are determined by a processor."** The specification does not support this limitation and it is burden to the examiner.

6. Claims 10 and 23 are rejected under 35 U.S.C. 112, first paragraph for undue breadth as being single means claims. A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. *In re Hyatt*, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.). When claims depend on a recited property, a fact situation comparable to *Hyatt* is possible, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor. See MPEP 2164.08(a).

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims one of the limitation is "The determination comprises; collecting into a first list, results, associated with one the one or more negative terms, and collecting into a second list, results associated with the one or more positive terms while omitting from the second list any results that are in the first list." The specification on page 9, line 27 to page 10, line 6 stated as **"It should be noted that a database that supports SQL may not supply subtraction operator."** In such instances a problem in processing the sum of terms as described above may arise. In order to process (or evaluate) a subtraction, the method according to the present application: collects all positive terms in a list; collects all negative terms into another list; and then subtracts the positive term list and the negative term list whilst ignoring duplicates.

9. The following claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite:

i) Claims 1, 11 and 14, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The specification does not teach specifically the claiming limitation **"the plurality of results are determined by a processor."**

ii) Claim 1, the word "operable" is not a definite term and considered as indefinite and vague.

iii) Claim 1, 9, 14, 22 and 31 used the term "processor" and the specification is not defined as a hardware or software component. Specification, page 1, 7, 9,10 has used the word as "processing" and which is not the same as processor. Appropriate amendment is required for claims.

iv) Claims 10 and 23, used the word "means" is preceded by the word(s) "comprising" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-5, 14-18, and 27-31 are rejected under 35 U.S.C. § 101, because none of the claims are directed to statutory subject matter. While the claims 1, 14, 31, recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101

must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101"). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps of receiving a service query, obtaining a sum of terms associated with the service query by expanding at least one nested term into one or more un-nested terms, evaluating the sum of terms as a plurality of SQL instructions, wherein the sum of terms comprises one or more positive terms and one or more negative terms, determining a plurality of results associated with the sum of terms, wherein the plurality of results are determined by a processor and the determination comprises: collecting, into a first list, results associated with the one or more negative terms, and collecting, into a second list, results associated with the one or more positive terms while omitting from the second list any results that are in the first list, and providing one or more results from the second list to a user.", which can all be done mentally, and therefore do not qualify as a statutory process. Claims 2-5, 27-30 and 15-18, are dependent on independent claims 1 and 14 respectively. Therefore, they are also rejected under the same rationale as the independent claims.

12. Claims 9-10 and 22-23 are rejected under 35 U.S.C. § 101, because claims are directed to program per se. Independent claims 9 and 22 are claiming a computer

program and functional descriptive material consisting of data structures and computer programs, which impart functionality when employed as a computer component. As such, the claims are not limited to statutory subject matter and are therefore non-statutory. Applicant used a word "processor" and it is neither the drawings nor the specification supports the amendment. See Diehr, 450 U.S. at 185-86, 209 USPQ at 8. Claims 10 and 23 are dependent on 9 and 22 and they are rejected under the same rationale as their independent claim.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made."

14. Claims 1-5, 9-10, 14-18, 22-23 and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corn et al. (US Patent 6,356,892) Corn, in view of Lohman et al. (US Patent 6,112,198) Lohman, and in view of Krishna et al. (US Patent 5,412,804) hereinafter Krishna.

15. As per independent claim 1, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33).

Corn teaches the claimed “evaluating the sum of terms as a plurality SQL instruction” as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44 and col. 6, lines 41-49). Corn teaches the claimed “the sum of terms comprises one or more positive terms and one or more negative terms” as the SQL subqueries are combined into a single SQL query according to a set of combination rules chosen corresponding to the logical operators of the LDAP filter query (col. 3, lines 4-20). Corn teaches the claimed “the determination comprises: collecting, into first list, results associated with the one or more negative terms and collecting into the second list, results associated with the one or more positive terms” as using combination rules, for example, if a pair of LDAP filter elements are subject to an LDAP logical NOT operator, the corresponding entry ID (EID) sets are **merged** using an SQL NOT IN logical operator. Similarly, if a pair of LDAP filter elements are subject to LDAP logical AND operator the corresponding EID sets are **merged** using an SQL INTERSECT logical operator. (Fig. 5, col. 7, lines 39-57).

Corn does not explicitly teach omitting elements. Lohman teaches the claimed, “omitting from the second list any results that are in the first list” as duplicate elimination (it is similar to comparing and eliminating elements from the second list with respect to elements in the first list when they are same in both) (col. 5, lines 30-33). Lohman teaches the claimed “determining a plurality of results associated with the sum of terms wherein the plurality of results are determined by the processor” as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (Fig. 6A, col. 8, lines 1-3, col. 2, lines 47-48).

Further, Corn does not explicitly teach receiving a service query. However, Lohman teaches the claimed, "receiving a service query" as a given query (col. 2, lines 47-48). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to combine the teachings of the cited references because Lehman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms and presenting results to a user. However, Krishna teaches "obtaining a sum of terms associated with the service query by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Krishna teaches "providing one or more results from the second list to a user" (Fig. 1, col. 4, lines 51-54). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to combine the teachings of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

16. As per dependent claim 2, Corn teaches the claimed "expanding each term to remove NOT operators" as if a pair of LDAP filter elements are subject to an LDAP logical operator, the corresponding EID sets are merged using an SQL NOT IN logical operator (Fig. 5, col. 7, lines 50-52).

17. As per dependent claim 3, Corn teaches the claimed "a sum of terms are expanded using Boolean logic" as complex search filters are generated by combining basic filters with Boolean operators (col. 7, lines 3-4).

18. As per dependent claim 4, Corn teaches the claimed "the service query is an X.500 or LDAP service query" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

19. As per independent claim 9, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed "a database operable to store arbitrary data" as the invention provides hierarchical LDAP searches using relational tables in the LDAP directory service having a relational database management system as backing store (col. 2, lines 60-63). Corn teaches the claimed "a processor that is communicatively coupled to the database and that processes a service query" as the method begins at step 60 by parsing an LDAP filter-based query for elements and logical operators for the filter query (Fig. 5, col. 5, lines 37-40). Further, Corn teaches the claimed "evaluating the sum of terms of SQL instructions" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44 and col. 6, lines 5-7). Corn teaches the claimed "the sum of terms comprises one or more positive terms and one or more negative terms" as the SQL subqueries are combined

into a single SQL query according to a set of combination rules chosen corresponding to the logical operators of the LDAP filter query (col. 3, lines 4-20).

Further, Corn teaches the claimed “determining a plurality of results associated with the sum of terms” as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (Fig. 6A, col. 8, lines 1-3). Corn teaches the claimed “the determination comprises: collecting, into first list, results associated with the one or more negative terms and collecting into the second list, results associated with the one or more positive terms and collecting into the second list” as using combination rules, for example, if a pair of LDAP filter elements are subject to an LDAP logical NOT operator, the corresponding entry ID (EID) sets are **merged** using an SQL NOT IN logical operator. Similarly, if a pair of LDAP filter elements are subject to LDAP logical AND operator the corresponding EID sets are **merged** using an SQL INTERSECT logical operator (Fig. 5, col. 7, lines 39-57). Corn does not explicitly teach omitting elements. Lohman teaches the claimed, “omitting from the second list any results that are in the first list” as duplicate elimination (it is similar to comparing and eliminating elements from the second list with respect to elements in the first list when they are same in both) (col. 5, lines 30-33). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman’s teachings would have allowed Corn’s method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms and presenting result to a user. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Krishna teaches "providing one or more results from the second list to a user" (Fig. 1, col. 4, lines 51-54). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

20. As per dependent claim 10, Corn teaches the claimed "the directory service arrangement including means to perform X.500 or LDAP services" as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

21. As per independent claim 14, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed "mapping the sum of terms to a plurality of SQL instructions" as to provide a method for mapping LDAP search queries into an SQL query (col. 2, lines 51-54). Corn teaches the claimed "the sum of terms comprises one or more positive terms and one or more negative terms" as the SQL subqueries are combined

into a single SQL query according to a set of combination rules chosen corresponding to the logical operators of the LDAP filter query (col. 3, lines 4-20). Corn teaches the claimed "the determination comprises: collecting, into first list, results associated with the one or more negative terms and collecting into the second list, results associated with the one or more positive terms and collecting into the second list" as using combination rules, for example, if a pair of LDAP filter elements are subject to an LDAP logical NOT operator, the corresponding entry ID (EID) sets are **merged** using an SQL NOT IN logical operator. Similarly, if a pair of LDAP filter elements are subject to LDAP logical AND operator the corresponding EID sets are **merged** using an SQL INTERSECT logical operator (Fig. 5, col. 7, lines 39-57).

Corn does not explicitly teach omitting elements. Lohman teaches the claimed, "omitting from the second list any results that are in the first list" as duplicate elimination (it is similar to comparing and eliminating elements from the second list with respect to elements in the first list when they are same in both) (col. 5, lines 30-33). Lohman teaches the claimed "determining a plurality of results associated with the sum of terms wherein the plurality of results are determined by the processor" as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (Fig. 6A, col. 8, lines 1-3, col. 2, lines 47-48).

Further, Corn does not explicitly teach receiving a service query. However, Lohman teaches the claimed "receiving a directory service query" as a given query (col. 2, lines 47). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references

because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms and presenting results to a user. However, Krishna teaches "obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Krishna teaches "providing one or more results from the second list to a user" (Fig. 1, col. 4, lines 51-54). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

22. As per dependent claim 15, Corn teaches the claimed "expanding each term to remove NOT operators" as if a pair of LDAP filter elements are subject to an LDAP logical operator, the corresponding EID sets are merged using an SQL NOT IN logical operator (Fig. 5, col. 7, lines 50-52).

23. As per dependent claim 16, Corn teaches the claimed "the sum of terms are expanded using Boolean logic" as complex search filters are generated by combining basic filters with Boolean operators (col. 7, lines 3-4).

24. As per dependent claim 17, Corn teaches the claimed “the service query is an X.500 or LDAP service query” as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

25. As per dependent claim 18, Corn teaches the claimed “the service query is a search service query” as LDAP provides the capability for directory information to be efficiently queried and it offers a rich set of searching capabilities with which users can put together complex queries to get desired information from a backing store (col. 1, line 65 to col. 2, line 2).

26. As per independent claim 22, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed “a database using a plurality of tables, each table having a plurality of rows and columns, and storing arbitrary data” as the invention provides hierarchical LDAP searches using relational tables in the LDAP directory service having a relational database management system as backing store (col. 2, lines 60-63). Further, Corn teaches the claimed “processes a directory service query” as the method begins at step 60 by parsing an LDAP filter-based query for elements and logical operators for the filter query (Fig. 5, col. 5, lines 37-40). Further, Corn teaches the claimed “mapping the sum of terms to a plurality of SQL instructions” as to provide a method for mapping LDAP search queries into an SQL query (col. 2, lines 51-54).

Further, Corn teaches the claimed “determining a plurality of results associated with the sum of terms” as the given query is broken up into subtasks and all the subtasks are executed in parallel by the processors (Fig. 6A, col. 8, lines 1-3). Corn teaches the claimed “the sum of terms comprises one or more positive terms and one are more negative terms” as the SQL subqueries are combined into a single SQL query according to a set of combination rules chosen corresponding to the logical operators of the LDAP filter query (col. 3, lines 4-20).

Corn teaches the claimed “the determination comprises: collecting, into first list, results associated with the one or more negative terms and collecting into the second list, results associated with the one or more positive terms and collecting into the second list” as using combination rules, for example, if a pair of LDAP filter elements are subject to an LDAP logical NOT operator, the corresponding entry ID (EID) sets are **merged** using an SQL NOT IN logical operator. Similarly, if a pair of LDAP filter elements are subject to LDAP logical AND operator the corresponding EID sets are **merged** using an SQL INTERSECT logical operator (Fig. 5, col. 7, lines 39-57).

Corn does not explicitly teach omitting elements. Lohman teaches the claimed, “while omitting from the second list any results that are in the first list” as duplicate elimination (it is similar to comparing and eliminating elements from the second list with respect to elements in the first list when they are same in both) (col. 5, lines 30-33). Lohman teaches the claimed “determining a plurality of results associated with the sum of terms wherein the plurality of results are determined by the processor” as the given query is broken up into subtasks and all the subtasks are executed in parallel by the

processors (Fig. 6A, col. 8, lines 1-3, col. 2, lines 47-48). Lohman also teaches the claimed “a processor that is communicatively coupled to the database” (col. 2, lines 46-47). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Lohman’s teachings would have allowed Corn’s method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms and providing results to a user. However, Krishna teaches “obtaining a sum of terms by expanding at least one nested term into one or more un-nested terms” as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Krishna teaches “providing the determined plurality of results to a user” (Fig. 1, col. 4, lines 51-54). Thus, it would have been obvious to one ordinarily skilled in the art of data processing at the time of the invention, to combine teaching of the cited references because Krishna’s teachings would have allowed Corn’s method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51).

27. As per dependent claim 23, Corn teaches the claimed “The directory service arrangement comprising means to perform X.500 or LDAP services” as the invention provides hierarchical LDAP searching in an LDAP directory service having a relational database management as a backing store (Fig. 5, col. 5, lines 33-37).

28. As per dependent claims 27, Corn teaches the claimed, "evaluating the sum of terms comprises converting the sum of terms to a plurality of SQL instructions comprising at least one negative term and subtracting at least one result associated with the at least one negative term" as NOT is excludes entries by negating the IN operation before subquery (col. 3, lines 14-20).

29. As per dependent claims 28, Corn teaches the claimed "identifying at least one term associated with at least one NOT operator and expanding the at least one term associated with the at least one NOT operator into at least one negative term " as NOT is excludes entries by negating the IN operation before sub-query (col. 3, lines 14-20).

30. As per dependent claims 29, "if the service query comprises a term having at least two NOT operators, deleting or discarding from the sum of terms a third order term having at least two NOT operators" as NOT is excludes entries by negating the IN operation before sub-query (col. 3, lines 14-20).

31. As per dependent claims 30, Corn teaches the claimed "identifying at least one term associated with at least one NOT operator and expanding the at least one term associated with the at least one NOT operator into at least one positive term (Fig. 6A, col. 7, line 66 to col. 8, line 8).

32. As per independent claims 31, Corn teaches a method for searching a relational database using hierarchical, filter-based queries such as LDAP (col. 2, lines 31-33). Corn teaches the claimed "evaluating the sum of terms as a plurality SQL instructions" as for each filter element, the method continues to generate SQL subquery according to a set of translation rules (Fig. 5, col. 5, lines 40-44 and col. 6, lines 41-49). Corn teaches the claimed "expanding at least one term associated with at least one NOT operator into at least one negative term and at least one positive term" as the SQL subqueries are combined into a single SQL query according to a set of combination rules chosen corresponding to the logical operators of the LDAP filter query (col. 3, lines 4-20). Further, Corn teaches the claimed, generating a first list comprising one or more results associated with the at least one negative term and generating a second list comprising one or more results associated with the at least one positive term (Fig. 6A, col. 3, lines 14-20 and col. 7, line 66 to col. 8, line 8). Corn teaches the claimed, "if the service query comprises a term having at least two NOT operators, deleting from the sum of terms a third-order term corresponding to the term" as when NOT logical operator is present, at step 94 it generates a NOT IN operator to the SQL expression (Fig. 6B, col. 8, lines 40-51).

Corn does not explicitly teach omitting elements. Lohman teaches the claimed, "removing or omitting from the second list one or more results associated with the at least one negative term" as duplicate elimination (it is similar to comparing and eliminating elements from the second list with respect to elements in the first list when

they are same in both) (col. 5, lines 30-33). Corn does not explicitly teach receiving a service query. However, Lohman teaches the claimed "receiving a service query" as a given query (col. 2, lines 47-48). Lohman also teaches the claimed "the first list and the second list are generated by a processor" (col. 2, lines 46-47). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to combine the teachings of the cited references because Lohman's teachings would have allowed Corn's method for optimization by executing subqueries on data partitions (col. 1, lines 26-27).

Corn and Lohman do not explicitly teach expanding nested terms into un-nested terms and presenting results to a user. However, Krishna teaches "obtaining a sum of terms associated with the service query by expanding at least one nested term into one or more un-nested terms" as the alternate method of un-nesting a nested query having a count aggregate (Fig. 12, col. 14, lines 60-61). Krishna teaches "providing one or more results from the second list to a user" (Fig. 1, col. 4, lines 51-54). Thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention, to combine the teachings of the cited references because Krishna's teachings would have allowed Corn's method to find a better order of execution by the optimizer for evaluating the un-nested query blocks (col. 2, lines 49-51). Krishna teaches the claimed "obtaining a plurality of results wherein each term of the sum of terms is associated with one or more results" as when query blocks are pipelined, the result of a first query block is specified as input to the predicate of a second query block, but that

result is presumed to be evaluated only once before evaluation of the second query block (col. 2, lines 39-43).

Response to Arguments

33. Applicant's arguments filed on 9/30/2008 in the Appeal Brief have been fully considered but they are not persuasive and details are as follows:

- a) Applicant's argument regarding response to rejection under 35 U.S.C. 112, 1st paragraph stated as "the plurality of results are determined by a processor." See page 17, section B, paragraph first).

In response to Applicant's argument, Examiner respectfully disagrees, because Applicant cited in the Summary of the claimed subject matter Section as "p. 1, ll. 1-8, p. 6, ll.14-22, p. 10, ll. 3-25, Fig. 2, 2a, 2b" and these paragraphs do not talk about the processor or the determination. The cited drawings do not show any processor. Therefore, the rejection is valid.

- b) Applicant's argument regarding response to rejection under 35 U.S.C. 101 stated as "this rejection is improper."

In response to Applicant's argument, Examiner respectfully disagrees, because the claims without support from the specification or the drawings and the claim steps are considered as the steps of a program.

- c) Applicant's argument regarding response to rejection of claims under 35 U.S.C. 103 stated as "The cited references fail to support the rejection for several reasons."

In response to Applicant's argument, Examiner respectfully disagrees, because the prior art by Corn et al. (US Patent 6,356,892), Lohman et al. (US Patent 6,112,198) and Krishna et al. (US Patent 5,412,804) combined teaches all claims and their limitations.

d) Applicant's argument regarding the rejection of claim 1 under 35 U.S.C. 103 stated as "the cited references fail to teach, suggest, or disclose that the 'determination comprises...collecting, (see page 21, paragraph last).

In response to Applicant's argument, Examiner respectfully disagrees, because the prior art by Corn at (Fig. 5, col. 7, lines 39-57).

e) Applicant's argument regarding the rejection of claim 1 under 35 U.S.C. 103 stated as "Corn-Lohman combination is improper because the proposed combination would render Corn unsatisfactory for its intended purpose."

In response to Applicant's argument, Examiner respectfully disagrees, because Corn teaches as "The method begins by parsing an LDAP filter-based query for elements and logical operators of the filter query. For each filter element, the method generates an SQL subquery according to a set of translation rules. For each SQL subquery, the method then generates a set of entry identifiers for the LDAP filter query. Whereas, Lohman teaches as "A data base management system in accordance with the invention uses parallel query processing techniques to optimize data repartitioning, or to avoid it altogether." Therefor both references deals with querying a database and they are analogous to the claimed invention.

- f) As a caution, Examiner would like to inform Applicant that the claimed limitation from the Background Summary section can be rejected using the same section as Applicant Admitted Prior Art.

Conclusion

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sathyanarayan Pannala whose telephone number is (571) 272-4115. The examiner can normally be reached on 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sathyanarayan Pannala/
Primary Examiner, Art Unit 2164

srp

December 16, 2008